

## SECTION 02200 - SMALL PIPE FITTINGS AND APPURTENANCES

### PART 1 - GENERAL

#### 1.1 WORK INCLUDED IN THIS SECTION

- A. The WORK of this section includes materials and installation of copper tubing, copper, brass, and bronze pipe fittings and appurtenances.

#### 1.2 SUBMITTALS

- A. The following shall be submitted in compliance with Section 01300.
  - 1. Manufacturer's catalog data, descriptive literature and assembly drawings. Show dimensions and materials of construction by specification reference and grade.

### PART 2 - PRODUCTS

#### 2.1 COPPER TUBING AND FITTINGS

- A. Tubing
  - 1. Copper tubing shall conform to the requirements of ASTM B88 for seamless copper water tube.
  - 2. Copper tubing shall be true, smooth, and clean on both inside and outside and free from any cracks, seams, or other defects.
  - 3. Copper tubing shall be truly cylindrical, of the full specified outside and inside diameters, and of uniform thickness of metal.
- B. Piping located above ground or suspended within vaults shall be Type L.
- C. Buried copper piping shall be Type K.
- D. Fittings
  - 1. Fittings shall conform to ASTM B75 or B152, and ANSI B16.22.
  - 2. Fittings may have flared end connections for 1 inch copper and sweat by threaded for 1-1/2 inch and 2 inch copper.
- E. All solder shall be silver conforming to ASME SFA5.8, BCuP5.
- F. Cored solder shall not be permitted.

## 2.2 BRASS PIPE, NIPPLES, AND FITTINGS

- A. Short threaded nipples, brass pipe and fittings shall conform to ASTM B43, regular wall thickness.
- B. Threads shall conform to ANSI B2.1.

## 2.3 BRONZE APPURTENANCES

- A. Items specified herein shall be manufactured of bronze conforming to ASTM B 62, "Composition Brass or Ounce Metal Castings."
- B. For PVC pipe sizes smaller than 12 inches, 1 to 2 inch service saddles shall be the single strap type and shall have a full body circle clamp.
- C. For PVC pipe sizes larger than 12 inch, epoxy coated fabricated carbon steel saddles or ductile iron tapped tees shall be used.
- D. For 1 to 2 inch service saddles used on 16 inch and smaller ACP, pipe shall be the double strap brass saddle. See Sections 02500, 02510.
- E. Corporation stops shall be manufactured of bronze.
- F. Angle meter stops shall be manufactured of bronze.
- G. Customer service valves shall be manufactured of bronze with lever-type handle.

## 2.4 FLANGES, GASKETS, BOLTS, AND NUTS

- A. Connect to flanged valves and fittings with bronze flanges conforming to ANSI B16.24, Class 125 or Class 150, to match the connecting flange. Use threaded end companion flanges.
- B. Gaskets for flanged-end fittings shall be made of synthetic rubber and shall be fullface or drop-in type, 1/8 inch thick.
- C. Nuts and bolts shall be hexagonal head bolts and hexagonal head nuts conforming to ASTM Designation: 307, Grade B or SAE Grade 2, cadmium plated. All bolt threads shall be lubricated with graphite or oil prior to installation.

## **PART 3 - EXECUTION**

### 3.1 COPPER TUBING AND FITTINGS

- A. Tubing shall be cut square and burrs shall be removed. Inside and outside of fitting and pipe ends shall be cleaned. Annealing of fittings and tubing shall be prevented when making connections. Do not miter joints for elbows or notch straight runs of pipe for tees.

- B. Bends in soft copper tubing shall be long sweep. Bends shall be shaped with shaping tools. Bends shall be formed without flattening, buckling, or thinning the tubing wall at any point.
- C. Brazing procedures shall be in accordance with Articles XII and XIII, Section IX, of the ASME Boiler and Pressure Vessel Code. Stick type lead free silver solder shall be used on all DISTRICT facilities.
- D. Soldering shall conform to AWS C3.4 and the manufacturer's recommendations. Solder shall penetrate to the full depth of the cup in joints and fittings.
- E. Buried tubing shall be installed a minimum of 30 inches below finished street grade, unless approved by the DISTRICT, with some slack to provide flexibility in the event of a load due to settlement, expansion or contraction. The tubing shall be bedded, and covered with 12- inches of select material. Appropriate identification tape shall be installed on top of the select material.
- F. All 2-inch size services shall be installed with straight lengths of soft copper water tube, Type K.

### 3.2 SERVICE SADDLES

- A. Service saddles shall be compatible with the size and type of pipe receiving the saddle in accordance with the manufacturer's recommendations and shall be selected from the Approved Materials List.
- B. Service saddles shall be no closer than 18 inches to a valve, coupling, joint, or fitting.
- C. Installation of a service saddle on any machined section of Asbestos Cement Pipe shall NOT be permitted.
- D. The surface of the pipe shall be clean and all loose material removed to provide a hard, clean surface.
- E. Service saddles shall be tightened firmly to ensure a tight seal; however, care shall be used to prevent damage or distortion of either the corporation stop or service saddle by over tightening. A torque wrench shall be used in tightening to comply with manufacturer torque specifications.
- F. The tap into the pipe shall be made in accordance with the pipe manufacturer's recommendation.

### 3.3 FLANGE BOLTS AND NUTS

- A. Bolt threads shall be lubricated with a DISTRICT approved anti-seize compound.
- B. Flanged pipe shall be set with the flange bolt holes straddling the pipe vertical centerline.

3.4 INSULATING BUSHINGS AND UNIONS

- A. Pipe or fittings made of nonferrous metals shall be isolated from ferrous metals by nylon insulating pipe bushings.
- B. PVC bushings shall not be permitted.

END OF SECTION